

ABSTRACT

In a method of planarizing a semiconductor wafer, the improvement comprising polishing above metal interconnect lines to uniformly polish the topography of the wafer to a predetermined endpoint on the wafer sufficiently close above the metal interconnect lines, yet far enough away from the lines to prevent damage to the lines, comprising:

- a) filling gaps between metal interconnect lines of an inter metal dielectric in a wafer being formed, by depositing HDP fill on top of the metal interconnects, between the metal interconnects, and on the surface of a dielectric layer between the metal interconnects to create an HDP overfill;
- b) contacting the surface of HDP overfill of the processed semiconductor wafer from step a) with a fixed abrasive polishing pad; and
- c) relatively moving the wafer and the fixed abrasive polishing pad to affect a polishing rate sufficient to reach a predetermined endpoint and uniformly planar surface on the wafer sufficiently close above the metal interconnect lines and yet far enough away from the lines to prevent damage to the lines.